

Where Is The Native Forest?

Next Generation Science Standards:

- 3-LS4-4 Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
- 3-LS4-3 Construct an argument with evidence that in a particular habitat some organisms can survive well, some survives less well, and some cannot survive at all.

Hawai'i Content and Performance Standards III:

- SC.3.1.2 Safely collect and analyze data to answer a question.
- SC.3.7.4 Examine the ways in which people modify the physical environment and the effects of these changes.

Description:

The original plant and animal species that colonized the islands had to make various adaptations to better survive in the unique ecosystems on Maui. Students will view maps that show the different ecosystems, the park boundary, and the reality of how it looked both before and after human contact. They will discover if Haleakalā National Park and their protection efforts are working to preserve native species and their native habitats.

Duration: 45 minutes

Objectives: At the end of this lesson, the students will be able to:

- Determine how Haleakalā National Park protects cultural and natural resources and how the students can help protect them too.

Background:

Many ecosystems exist within Haleakalā National Park. Haleakalā rises from sea-level to a harsh dry 10,023 foot summit that is exposed to both the windward moist trade winds and leeward drying air. The variation in climate has greatly influenced the adaptations of the many plants and animals that are found here. Ancient Hawaiians had a very close relationship with the land on which they lived. They used a system of land division that was known as an Ahupua'a. It consisted of a large land division that most often ran from the summit of the mountain all the way to the edge of the outermost reef. Each ahupua'a contained many different habitats. They further divided the ahupua'a into smaller districts or moku. Each different region had its own natural resources, purposes, and usefulness. They had strict rules governing the use of these resources and cared for the land in incredibly ecologically wise ways. The moku map included in this lesson shows the current boundary of Haleakalā National Park stretching across many different traditional moku of Maui. The other two maps that are part of this lesson show the island of Maui's ecosystems by dominant vegetation type both before and after human contact. The visuals help to illustrate the drastic difference between the two maps and the tragic loss of native vegetation in Maui's recent history.

Vocabulary:

Ahupua'a: A large Hawaiian land division running from the top of the mountain to the sea containing many different habitats.

Ecosystem: A complex set of relationships among the living resources, habitats, and residents of an area.

Endemic: Native species that have adapted to a specific region over time and are found nowhere else.

Moku: A small Hawaiian land division where the larger ahupua'a is divided into smaller districts.

Materials Needed:

Maui Moku map (included)

Ecosystem types prior to human contact (included)

Ecosystem types post contact 2005 (included)

Procedure:

Step 1: Ecosystem Properties

Explore with students the different ecosystems found on Maui. Did anyone notice the change in the view and change in the temperature as we drove up to Haleakalā National Park? When you drive from the beach to the summit of Haleakalā, you go through as many different ecosystems as if you drove from Mexico to Alaska!

Step 2: Show the Maui Moku Map

Explain that this map shows the many different Moku of Maui. Hawaiians divide land based on the availability of wai ola (life-giving water). This system, called 'Aha Moku, divides each island into moku (districts). Ahupua'a are even smaller divisions within a moku that stretch from the mountain to the sea. 'Ohana (families) who live in an ahupua'a have everything they need for survival, such as fish, crops, and fresh water. 'Ohana share and trade resources from mountains to sea and know it is their kuleana (responsibility) to mālama (care for) the 'āina (land). Haleakalā National Park is shown in light grey. Notice how it contains land in many different moku of Maui.

Step 3: Show the map of Ecosystem types prior to human contact

Explain that this map shows the many different types of ecosystems that were present in Maui before the arrival of people. Point out the 12 different ecosystems. Notice where the alpine desert (light pink) is and where the rainforest (green) is.

Step 4: Show the map of Ecosystem types post contact (2005)

Explain that this map shows the ecosystems in Maui in the year 2005. Notice where the alpine desert (light pink) is and where the rainforest (green) is again. Look at all the non-native species (dark pink) that have spread across Maui!

Show both maps together, and ask:

- Where did the variety of ecosystems go?
- Do you think there are more or less variety in 2005?
- Do you think there are more or less variety today?
- What could have happened to cause this?
- Review possible impacts that people could have on ecosystems.
- Is the border around the park an imaginary border or is it real? If it's real, what could it be? Answer = A fence.

Step 5: Summarize and check for understanding

What does Haleakalā National Park do to protect native species? The ancient Hawaiians lived in harmony with the land and paid attention to all the different ecosystems and how to use as well as care for them. They understood the value of the land from the highest mountain to the outermost reef of the sea. Tie the ahupua'a system into how Haleakalā National Park stretches from summit to sea. It is Haleakalā National Park's mission to help not only save the remaining ecosystems on Maui but also to educate others so they can help save them too!

Maui Moku Map





